

Fabric roofing for retail centers
highlights a selection of spinoffs
in the field of construction

A New Look for the Shopping Mall

Opened last year, the East Towne Mall in Knoxville, Tennessee exemplifies a growing trend toward covering retail centers—wholly or partially—with permanent architectural fabric. The fabric used in construction of East

Towne Mall is STRUCTO-FAB®, a product of Owens-Corning Fiberglas Corporation, Toledo, Ohio, a lightweight but extremely durable material made of Fiberglas® coated with Teflon®. The translucent STRUCTO-FAB roofing transmits daylight to create a bright, outdoors-like atmosphere with reduced need for artificial lighting, thus providing not only an aesthetically-appealing structure but also an energy-efficient enclosure for protection from the weather.

The focal point of East Towne Mall is the large Center Court, whose lofty STRUCTO-FAB roof measures more than 15,000 square feet. The Center Court contains a two-story atrium, a food pavilion with more than a dozen restaurants sharing a common dining area, and a stage for such events as fashion shows and musical performances. One of the architectural attractions of STRUCTO-FAB is that the fabric structure requires fewer interior supports than conventional roofs, thus freeing more floor space for use. The Center Court is supported by only three 64-foot steel masts.

In addition to the Center Court, there are two intermediate courts, each covered by 2,700 square feet of STRUCTO-FAB supported by six laminated wood arches. There is also an 1,800-square-foot fabric



entrance canopy. Owens-Corning's Fabric Structures Division was design/build contractor for the fabric-covered areas of East Towne Mall, which is a joint venture of Melvin Simon & Associates of Indianapolis and JCP Realty of New York City. The architectural design company was Copeland, Novak, Israel and Simmons, also of New York.

John McNamara, senior vice president of the latter firm, explained why STRUCTO-FAB was selected: "The fabric structure seemed very appropriate. We needed large, unobstructed spans for the court areas and we also wanted a change in character to break up the long travel distances in the center. The cheerful ambience of the 'tents' seemed just right, especially for the Center Court."

STRUCTO-FAB is an outgrowth of a material whose origin dates to 1967, when NASA was looking for a new fabric for astronaut space suits. It had to be durable and noncombustible, yet thin, light and flexible. Owens-Corning had been experimenting with a glass fiber

yarn that seemed to meet all the requirements. The yarn was woven into a fabric, coated with Teflon (a product of The Du Pont Company, Wilmington, Delaware) and tailored for astronaut wear. The material thus produced provided the basis for development of heavier, construction-use adaptations.

At East Towne Mall, the fabric transmits 10 percent of daylight, but STRUCTO-FAB can be engineered for other applications to translucence values ranging from four to 18 percent. Because the filtered natural light is diffuse, shadows and glare disappear. In addition to the lessened need for artificial lighting, the fabric's high reflectivity—about 75 percent—minimizes solar heat buildup, contributing to lower cooling costs. Pound for pound, the Fiberglass fabric is stronger than steel; it weighs less than five ounces per square foot. STRUCTO-FAB has a number of attributes that combine to reduce maintenance requirements: the Teflon coating makes the fabric resistant to moisture, temperature extremes

and deterioration, and the non-stick characteristics of Teflon allow periodic cleansing of the roof surfaces by rainfall.

STRUCTO-FAB has been used to cover a number of other malls and retail centers in recent years. The first—in 1982—was the award winning Mall At 163rd Street, Miami, Florida. Other examples include the Buenaventura Mall, Ventura, California, completed last year; Bullock's Fashion Island, San Mateo, California; Town & Country Mall, Houston, Texas; and Crossgates Mall, Albany, New York. Although mall-covering is a relatively new application, Fiberglass fabric as a permanent covering has been in service since the early 1970s in a wide variety of structures all over the world, among them the Haj Terminal at King Abdulaziz International Airport, Jeddah, Saudi Arabia; animal enclosures at the North Carolina Zoological Park (Asheboro) and Boston's Franklin Park Zoo; and many sports and recreation centers, such as the Pontiac (Michigan) Silverdome and the Stadium at B.C. Place, Vancouver, British Columbia.

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At left, translucent covering of the Center Court at East Towne Mall, Knoxville, Tennessee admits daylight to provide an outdoors-like atmosphere.

Fabric roofing speeds construction, lowers costs and inspires innovative designs, such as the "caravanserai look" of Bullock's department store, San Mateo, California shown above.



The trend-setting Mall At 163rd Street, Miami, Florida, was the first shopping center to be completely enclosed by a permanent Fiberglass fabric roof. In this nighttime view, the roofing material reflects and diffuses interior lighting to provide soft, glareless illumination.